

ORNITHOLOGICAL LITERATURE

PESTICIDES AND THE LIVING LANDSCAPE. By Robert L. Rudd. University of Wisconsin Press. Madison, 1964: $6\frac{1}{4} \times 9\frac{1}{2}$ in., xiv + 320 pp., 22 tables, 1 fig. \$6.50.

This critically important book is a Conservation Foundation Study. The author is currently an Associate Professor of Zoology at the University of California, Davis. He has a broad background in ecology and wildlife management which includes four years of research on the effects of pesticides on wildlife populations in California. Mr. Rudd modestly identifies the purpose of his book as “. . . to explain to the serious reader, particularly one with responsibilities relevant to the subject, what the kinds of hazards resulting from chemical pest control are.” The author has certainly created a work which admirably achieves this goal; I suspect that a much wider audience will find his book to be immensely worthwhile reading. The scope of this work goes beyond the usual concept of pesticides and includes an appraisal of control programs aimed at birds and mammals. This is a well-organized section with a good historical background and a summary of recommendations.

Rudd makes his own position clear at the very beginning. Granted that man can mold much of his environment to suit his own immediate needs, he is still not independent of the ecological consequences of his actions. The author suggests (page 4) that “Concomitance . . . living with natural forces . . . rather than dominance is the only route to enduring self-interest.” Rudd is aware of the value of pesticides and states (page 4), “We realize, for example, that successes in pest control have, along with other technological applications, greatly changed the yields in American forest, grazing, and crop environments.” Alongside the unquestioned values of pesticides, Rudd poses a list of objections which include the following points: (1) Pesticides are really biocides which kill other forms of life along with target species. (2) The application of pesticides is often not restricted to target species or target area. (3) We are not paying enough attention to alternative means of crop protection. (4) The problems of delayed toxicity, secondary poisoning, storage, and concentration in food chains are now well enough known to raise serious questions as to the widespread use of many of our common pesticides.

Following his introductory chapters which attempt to present the pesticide problem in capsule form, the author proceeds with a section containing four chapters which are a review and summary of chemicals used in the control of pests. This material is presented in nontechnical terms understandable to the layman. It contains a description of the kinds of pesticides, including a table of acute and chronic oral toxicities of some common pesticides. As elsewhere in the text, his treatment is thorough, but not so technical as to be obscure to an interested lay reader. The book continues with a discussion of pest-control methods and programs with special attention to local versus mass control programs. Under “Loss, Cost, and Gain,” Rudd analyzes the justification of pest control. He concludes this section with a consideration of the basis of pesticide legislation which contains some very interesting discussions of the introduction of early insect pests and subsequent legal measures which have been aimed at these problems.

The remaining three-quarters of the book is an ecological discussion of the effects of pesticides on man, wildlife, and the environment. From the vantage point of his own extensive experience in pesticide-wildlife relationships, Mr. Rudd constructs a very impressive review of the effects of pesticides on invertebrates, cold-blooded vertebrates, and warm-blooded vertebrates. He includes discussions of resistance to insecticides, pesticide residues, predator-prey relationships, and the highly interesting phenomenon of substitution of one closely related form for another following pesticide treatment.

The concluding chapters are concerned with the transfer of pesticides in food chains, secondary poisoning, and changes in faunal composition following pesticide treatment. Some of the most interesting reading in the book appears in the author's examples of pesticide transfer and concentration in aquatic and terrestrial communities. Rudd is very skillful in bringing together a fascinating array of information to document the phenomenon of "biological concentration" which is possibly the most serious and widespread problem introduced with the use of chemically stable pesticides.

It is perhaps inevitable that this book will be compared to the late Rachel Carson's "Silent Spring." A comparison is not easily made, however, since the audience of each author is quite different. Silent Spring was supported by years of scholarly research but did not include the use of citations within the text. This allowed Miss Carson to use a more free-flowing style of presentation aimed at the widest possible audience. Silent Spring was a unique literary polemic, whereas "Pesticides and the Living Landscape" is a relatively dispassionate examination of the evidence now at hand. Indeed, at several points, Mr. Rudd is so cautious in stating his conclusions as to cause some of us to squirm, wishing, as it were, that we might evoke a more positive statement from him. This is not to question the author's courage or convictions. He has plenty of both and makes his recommendations with force.

It is interesting in retrospect to see the change which the last few years have brought to the field of pesticides and the environment. Many of the ideas presented in Silent Spring, which were so hotly contested at the time, now appear in Mr. Rudd's book more in the vein of accepted fact than in controversy.

A comparison of the content of Pesticides and the Living Landscape and Silent Spring readily convinces one of the speed with which this field is moving and emphasizes the need for a fresh statement of material now at hand. Indeed, with a press deadline of September 1963, Mr. Rudd, like Miss Carson before him, has missed by a few months the appearance of material which would have dramatically fortified his discussion of pesticide residue concentration in food chains. The effect of DDT in knocking out reproduction in New York's Lake George lake trout is a case in point. The growing evidence that our own national symbol, the Bald Eagle, is a likely victim of the same phenomenon would also have made a very interesting contribution to Mr. Rudd's discussion.

In criticism of Pesticides and the Living Landscape, I have no broad comments to make. I like the wide scope which the author has given to this work; he clearly states the pre-suppositions which are the foundation of his recommendations. He is cautious in treating objective material and realizes when he is making subjective judgments. In a more detailed examination, a check of the citations in the last half of the text against the references cited revealed no discrepancies. In twenty references pulled at random from the bibliography and checked against original journal entry, only one insignificant typographical error was detected. The only error in reference interpretation which I noted occurred in a citation wherein Rudd implies that lichens are the principal food of lemmings in the Alaskan Arctic. To my knowledge, neither the brown nor the collared lemming makes any significant use of lichens for food. The point is a small one, however, and does not subtract from the validity of the author's use of this otherwise excellent example.

Moving to the more subjective matter of literary style, Rudd's writing is for the most part pleasing and varied; however, he occasionally lapses into muddy sentences and in one instance (page 179) employs a run-on sentence which keeps the reader on edge for thirteen lines. Furthermore, he tends to very much over-use the word "moreover" to the

near exclusion of other connectives. The author's choice of words is also sometimes puzzling as in the response to rhetorical questions on page 178: "Are we producing 'biological deserts'? Yes; pest control, where it *assists* in simplifying habitats, *accomplishes* these things" (italics mine).

These are small and carping complaints on what is over-all a handsome scientific work. We are deeply indebted to Mr. Rudd for bringing his experience and scholarly industry to bear upon a problem which is so vital to us all. The closing chapter "Retrospect and Prospect" is a summary of his point of view and a forceful charge to all conscientious citizens on the problems of pesticides in our environment. Everyone interested in wild-life conservation will find this book to be stimulating and very rewarding reading.—
DANIEL Q. THOMPSON.

CHECK-LIST OF BIRDS OF THE WORLD. A continuation of the work of James L. Peters. Volume 10. Edited by Ernst Mayr and Raymond A. Paynter, Jr., Museum of Comparative Zoology, Cambridge, Mass., 1964: 6½ × 9¼ in., ix + 502 pp. \$10.00.

In my review of Volume 9, the first of the "post-Peters" volumes of this check-list (1960. *Wilson Bull.*, 72:415, 416), I emphasized the importance of the series as a basic reference work in ornithology. I reemphasize this point now, with the appearance of Volume 10, for an excellent reason. The "Check-list of Birds of the World" is a publication project, now nearing completion, which merits the support of all ornithologists, whatever their specialties. No matter how critical we may be of matters of detail in individual volumes (as I shall be, below), it is to our best interests to have available a complete, up-to-date list of the avifauna of the world. The nontaxonomist can use it as a guide to the names of the birds he is studying; the taxonomist can use it as a jumping-off place for controversy. This would seem so self-evident as to be a waste of space to repeat, but I am informed by the editors that the sales of recent volumes of the Check-list have been far below expectations. It is true that, for many nontaxonomists, a set of "Peters" might appear to be an unjustifiable *personal* expenditure, but we should all certainly see to it that our *libraries* purchase the volumes as they appear. Dr. Mayr writes me, however, that surprisingly few libraries subscribe to the set. I find this both shocking and puzzling. It is quite possible that some potential purchasers, both individuals and libraries, have hesitated to buy current volumes because of unavailability of some of the earlier volumes, making the assembling of a full set a matter of paying premium prices to secondhand book dealers. This drawback has been remedied, and all but one of the "out-of-print" volumes are being reprinted. The sole exception is Volume 1, of which a revised edition is in preparation. The Check-list is financed through a revolving fund, so the appearance of the remaining volumes rests in large part on sales of those now in print. I urge those readers of *The Wilson Bulletin* who do not wish to buy personal copies of the Check-list of Birds of the World to recommend purchase of a set by their institutional or local libraries. And should the price of these volumes seem high, I strongly recommend reading the article entitled "Scientific Publishing," by Tinsley Crowther (1964. *Science*, 144:633-637).

Let no one misunderstand; I do not take this position because I believe the Check-list to be perfect and its authors infallible, so that nontaxonomists may take its classifications and its statements of distribution as being the last word. Far from it. But the usefulness of the work as a whole so far outweighs the importance of the presence in its pages of errors of fact or judgment that its completion should be encouraged in any way possible. The authors and editors of this check-list receive no pay or royalties for their work on the project, and deserve our support and our gratitude.